

Deepak Maram

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📄 <https://sites.google.com/view/deepak-maram/home>

Research

I am broadly interested in computer security and applied cryptography. My recent focus has largely been around decentralized identity. My research has led to direct industry adoption. DECO is licensed from Cornell by Chainlink. ZkAttest is implemented and maintained by Cloudflare. CHURP is on Oasis Labs product road map.

Education

2018-present **Ph.D. Candidate in Computer Science.**

Cornell University, USA

Advisor: *Ari Juels*, GPA: 3.71/4

2012-16 **B.Tech in Computer Science with Honors.**

Indian Institute of Technology, Bombay, India

GPA: 8.91/10

Industry Experience

2020 **Cryptography Research Engineer Internship**, *Cloudflare*, Remote.

Devised a privacy-preserving, usable alternative to CAPTCHA using WebAuthn (Web Authentication) as the base layer with a ring-signature scheme as an anonymity layer. Designed a zero knowledge Σ -protocol and prototyped it in TypeScript.

2021 **Research Engineer**, *Offchain Labs (Arbitrum)*, Remote.

Worked on minimizing delay-induced negative externalities in optimistic rollups. Designed an insurance token to hedge against protocol delays, solutions to linear delay attacks.

Programming Experience

Languages C++ (4000 lines), Python (3000 lines), Java (3000 lines), JavaScript (1000 lines), Rust (500 lines)

Selected Research Projects

2022 **Formal study and design of new multi-factor authentication mechanisms.**

D. Maram, I. Eyal, M. Kelkar. Ongoing.

2021-22 **GoAT: File Geolocation via Anchor Timestamping**, [github](#).

D. Maram, I. Bentov, M. Kelkar, A. Juels. In submission.

2020-21 **CanDID: Can-Do Decentralized Identity with Legacy Compatibility, Sybil-Resistance, and Accountability**, [candid.id](#).

D. Maram, H. Malvai, F. Zhang, N. Jean-Louis, A. Frolov, T. Kell, T. Lobban, C. Moy, A. Juels, and A. Miller. *In IEEE Symposium on Security and Privacy (S&P) 2021.*

2020 **ZkAttest: Ring and Group Signatures for existing ECDSA keys**, [github](#).

A. Faz-Hernandez, W. Ladd, **D. Maram**. In Selected Areas in Cryptography (SAC) 2021.

2019-20 **DECO: Liberating Web Data Using Decentralized Oracles**, [deco.works](#).

F. Zhang, **D. Maram**, H. Malvai, S. Goldfeder, and A. Juels. *In Proceedings of the 2020 ACM Conference on Computer and Communications Security (CCS).*

- 2018-19 **CHURP: Dynamic-committee Proactive Secret Sharing**, churp.io.
D. Maram, F. Zhang, L. Wang, A. Low, Y. Zhang, A. Juels, and D. Song. *In Proceedings of the 2019 ACM Conference on Computer and Communications Security (CCS)*.

Honors / Awards

- 2018 Awarded University Fellowship by Cornell University
- 2012 Secured All India Rank 12 in *IIT-JEE* out of 500,000 students
- 2012 Secured All India Rank 36 in *AIEEE* out of 11,00,000 students
- 2012 Recipient of KVPY scholarship and attended VIJYOSHI Camp
- 2011 Awarded merit certificate for being in top 1% in National Standard Examination - Astronomy

Posters / Talks

- 2021 **GoAT: File Geolocation via Anchor Timestamping.**
Presented our work at the Protocol Labs Research Seminar Series, 2021.
Presented our work at the Initiative for Cryptocurrencies and Contracts (IC3) Retreat, 2021
- 2020-21 **CanDID: A Decentralized Identity System.**
Presented our work at the IEEE Symposium on Security and Privacy (S&P), 2021.
Presented our work at the Novi Reserach Seminar, 2021.
Presented our work at the Hyperledger Identity Working Group, 2020.
Presented our work at the 31st Internet Identity Workshop, 2020.
Presented our work at the Travel Rule Information Sharing Architecture Forum, 2020.
- 2019 **CHURP: Dynamic-committee Proactive Secret Sharing.**
Presented our work at the ACM conference on Computer and Communication Security (CCS), London.
Gave a talk at the Initiative for Cryptocurrencies and Contracts (IC3) Winter Retreat, Interlaken.

Graduate Course Work

Security & Privacy Technologies, Privacy in the Digital Age, Cryptocurrency and Smart Contracts, Advanced Programming Languages, Advanced Operating Systems, Intro to Computer Vision, Computational Ring Theory (UG), Graph Theory (UG)

Media Coverage

- Aug 29, 2020 *Forbes*, "Chainlinks New Acquisition From Cornell University Could Transform Blockchain For Good".
- Aug 29, 2020 *CoinDesk*, "Chainlink Acquires Blockchain Oracle Solution From Cornell University".
- Mar 30, 2019 *MIT Tech Review China*, "The whereabouts of 4 million bitcoins worldwide are missing".

Service / Extra-curriculars

- 2021-22 Acted as a Teaching Assistant for the courses: CS5433: Blockchains, Cryptocurrencies, and Smart Contracts, CS5435: Security and Privacy Concepts in the Wild.
- 2019-20 Served as the treasurer of PhD student organization At Cornell Tech (PACT)
- 2014 Awarded first prize at the *XLR8* competition for designing a Wireless Controlled Bot
- 2003-07 Won first prize in several district-level chess competitions and participated in state-level competitions